ABSTRACT OF THE DISCLOSURE

A method is provided for forming a conductive interconnect in a semiconductor device. The method comprises forming a dielectric layer above a structure layer, forming a cap layer above the dielectric layer, forming a photoresist layer above the cap layer, and forming an opening in the photoresist layer. A first anisotropic etch is performed into a region of the cap layer underlying the opening in the photoresist layer to form an etched region in the cap layer, leaving a portion of the cap layer in the etched region. The pattern in the photoresist is transferred into the cap layer. The photoresist layer is removed from above the cap layer while the remaining portion of the cap layer in the etched region protects the dielectric layer from damage by the photoresist removal process. A second anisotropic etch is performed to form an opening in the dielectric layer, the opening in the dielectric layer having a sidewall. A barrier layer is formed above at least the sidewall of the opening in the dielectric layer, and a conductive material is deposited to fill at least the opening in the dielectric layer.

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